

TB-O v1.4.6 BOM

The part numbers may seem strange at first.

To try and simplify things, the parts that come directly from the original 303 schematic maintain the 303 original part numbering.

The parts added for this design are generally numbered 300+ for the voice board, and 400+ for the control board.

Things like IC, pots, jacks etc don't follow this numbering. They just start from part number 1 etc.

Part substitution is fine, if you have lots of 1% resistors, then go for it.

The only thing to watch is the height of electrolytics, low profile ones can be used (an example Mouser part is provided)

However standard 11mm electrolytics can be used, just lay them flat against the board (where space permits) or place them at 45degrees to the board.

Voltages also not an issue, anything over 16v should be good, maybe 25v for the 47uF in the power filtering.

Standard 11mm clearance between the two boards, so just keep that in mind.

If you are sourcing your own transistors, Aliexpress has loads of modern 733,945,1815 etc, I've tested these and they work fine and have >300hfe mostly

In the Mouser column, I've either placed a part number or search terms. Due to part shortages etc, the string that will find you suitable parts to choose from what is in stock etc.

Value	Count	Location	Mouser	Alternatives	Notes
Resistors					
TEMPCO					
1K	2	R100A,R100B			Thonk
5% Carbon 1/4W					
1K	4	R315,R318,R321,R324	Search "CFR 1K 1/4w" etc		
2K2	1	R104			
10K	7	R34,R36,R101,R105,R305,R306,R319			
15K	2	R310,R317			
22K	2	R325,R400			R325 = R299 on early boards
27K	1	R106			
47K	5	R102,R118,R308,R312,R322			
68K	2	R301,R307			
100K	11	R35,R300,R302,R303,R304,R309, R311,R314,R316,R320,R323			
220K	1	R103			
Capacitors					
MLCC					
10n	1	C305	mlcc leaded 0.01uf		2.5mm leg spacing
100n	4	C303,C304,C317,C318	mlcc leaded 0.1uf		2.5mm leg spacing
Polybox					
1uF	5	C306,C307,C308,C309,C400	80-R82DC4100CK60K		5mm leg spacing, no taller than 10mm
Polyester (Nichicon QYX)					
1n	1	C34	qyx 1nf 50v		5mm leg spacing
10n	1	C33	qyx 10nf 50v		5mm leg spacing

12n 4 C10,C310,C311,C312 qyx 12nf 50v 5mm leg spacing

Electrolytic

0.33u/25	1 C302	50NW50R33MEFC4X5	Low profile, but normal 11mm will fit laying on an angle towards top of board
1u/50	3 C11,C314,C315		Low profile, but normal 11mm will fit laying on an angle towards spaces, between transistors etc
47u/25	2 C300,C301		Low profile, but normal 11mm will fit laying on an angle towards each other

Diodes

1N4148	1 D25	512-1N4148
1N5817	2 D1,D2	511-1N5817

IC

78L05	1 IC1	511-L78L05ABZ		
TL074	1 IC2	595-TL074ACN		
AN6562	2 IC3,IC4	926-LM358N/NOPB	LM358	AN6562 NOS rare part searchinv, or LM358 is fine.

Transistors

2SC1583	1 or 0 Q26	NOS rare part	*	If you use Q26 then leave Q26A and Q26B empty
2SA733P	4 Q8,Q27,Q301,Q302	NOS rare part	2SA1015,2SA608**	
2SC945P	2 or 4 Q24,Q25 Q26A,Q26B	NOS rare part	2SA1815,2SC536F**	If you use Q26A and Q26B then leave Q26 empty
2SK30A-O	1 Q28	NOS rare part	2SK118***	

* To be clear, the board has space for either. If you don't have any 1583, real ones are getting harder to find and can be costly, a matched pair of the NPN you are using will be fine. So if you are using a matched pair, use the A and B locations, and ignore the Q26 5 pin space.

** Ignore most of the voodoo around transistor types, the original 303 used all NPN types listed during production, so any will be fine.

There is some truth in having a high hfe in Q8, so if you want to test yours, go for it.

*** Creates the base SAW core shape, should be the -O variant, getting harder to find, but the 118 is identical, just in the smaller package. (O and R variants used)

These are provided in the partial kit option.

Trimmer

100K	1 TM4-TUNE	652-3362P-1-104LF	3362
5K	1 TM5-WIDTH	652-3362P-1-502LF	3362

Misc

B50K	2 VR1-TUNE, VR2-PW	Thonk etc	9mm alpha	Can get a center detent for VR1 if you like
A10K	1 VR3-PWM	Thonk etc	9mm alpha	
A1M	1 VR4-FM	Thonk etc	9mm alpha	
PJ301M	7 U1-7	Thonk etc	Thonkiconn	
ON-ON	1 SW1	612-200MSP1T1B1M2RE	Thonk cheaper etc	Sub-mini on-on switch
PWR	1 SV1			10pin euro power header or 2x5 pin header
2x3	3 SV2,SV3,SV4			2x3 pin male header - can use 2x6 for SV3/4
2x3	3 SV2,SV3,SV4			2x3 female header - can use 2x6 for SV3/4
11mm	2 Standoff			
3mm	4 Screws for standoff			

Revision History

220630 v1.4.5	Initial release
220730 v1.4.6	Updated with calibration change for R102 to 47K from 100K
220830 v1.4.6	Changed triangle op-amp gain resistor R319 from 33K to 10K
221212 v1.4.6	Corrected to need just 2x 68K